

Commersonia rosea (Malvaceae s.l.: Lasiopetaleae): a new, rare fire-ephemeral species from the upper Hunter Valley of New South Wales

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Abstract

*Bell, Stephen A.J.*¹ and *Copeland, Lachlan M.*² (¹Eastcoast Flora Survey, PO Box 216, Kotara Fair, NSW 2289, Australia, ²Botany, University of New England, Armidale, NSW 2351, Australia) 2004. *Commersonia rosea* (Malvaceae s.l.: Lasiopetaleae): a new, rare fire-ephemeral species from the upper Hunter Valley of New South Wales. *Telopea* 10(2): 581–587. *Commersonia rosea* S.A.J. Bell & L.M. Copel., a fire-ephemeral species from the Central Western Slopes of New South Wales is described as new. Notes on its distribution, ecology and conservation status are given. The species is currently known from just four small populations, totalling c. 200 plants, and is considered endangered.

Introduction

Commersonia J.R. Forst. & G. Forst. is a medium-sized genus with at least 14 published species widely distributed in Australasia and the Pacific Islands (Harden 1990; Short 1996). All 14 species occur in Australia and 12 of them are thought to be endemic (Harden 1990). Although *Commersonia* has traditionally been placed in the Sterculiaceae this family has recently been included within the greatly expanded Malvaceae s.l. (Judd & Manchester 1997; Bayer et al. 1999; Whitlock et al. 2001; Wilkins & Chappill 2002). Within Malvaceae s.l., recent molecular and morphological studies suggest that *Commersonia* is best placed within the tribe Lasiopetaleae (Bayer et al. 1999; Whitlock et al. 2001; Wilkins & Chappill 2002).

Since the treatments of Sterculiaceae in the floras of south-eastern Queensland, New South Wales and Victoria (Stanley & Ross 1986; Harden 1990; Short 1996) a number of putative new taxa of *Commersonia* have been discovered. Although some of these taxa have been documented (e.g. Briggs & Leigh 1996; Bell 1997; Henderson 2002) many are yet to be formally described.

During recent vegetation surveys of the Denman-Sandy Hollow area in the Upper Hunter Valley of New South Wales, a distinctive, prostrate taxon with large pink flowers was discovered growing in several disjunct areas around Sandy Hollow. Although originally identified as a species of *Rulingia*, the weakly divided staminodes and the relatively large number of ovules per locule (four to six) suggest that the plant falls within the circumscription of *Commersonia*, following Stanley and Ross (1986) and Short (1996). The presence and shape of the aril also conforms with that indicated for *Commersonia* as depicted in Wilson and Chappill (2002). As the plants did not match any published taxa, an examination of all specimens of *Commersonia* and *Rulingia* in CANB, NSW and NE was conducted (herbarium abbreviations follow Holmgren et al. 1990). This examination supported the recognition of a new species of *Commersonia*.

The species appears to be highly restricted and is currently subject to several threats. For this reason, it was considered appropriate to describe it as new, even though the

entire genus of *Commersonia* is in need of revision (C. Wilkins pers. comm. 2002). This paper describes the new species, gives notes on its distribution and ecology and will assist in its conservation.

Commersonia rosea S.A.J. Bell & L.M. Copel., sp. nov.

C. uelanopetala F. Muell. et specie inedita (Zamia Range) habitu prostrato similis, sed ab eis floribus paucioribus, majoribus, perspicue roseis et setis capsulae brevioribus differt.

Type: New South Wales: Central Western Slopes: Pikes Gap, 4 km E of Sandy Hollow, 32°20'S, 150°36'E, 250 m alt., L.M. Copeland 2819 & W.E. Holzinger, 6 Jan 2001 (holo NSW; iso BRI, CANB, NE).

Prostrate shrub 0.1–0.3 m high, producing trailing branches up to 60 cm long. *Braehes* terete, densely stellate-hairy (especially on young growth), becoming glabrescent and channelled on older branches; hairs 0.3–0.5 mm long on young growth. *Leaves* petiolate, petioles 4–10 mm long, densely stellate-hairy; stipules linear, 6–9 mm long and 1 mm wide, stellate-hairy, persistent; lamina narrowly oblong to narrowly elliptic, mid-green, (15–) 24–70 mm long, 8–17 mm wide; base obtuse to truncate; margins crenate to toothed; apex obtuse; adaxial surface sparsely to moderately stellate-hairy, with whitish hairs 0.3–0.5 mm long, occasionally mixed with 0.9–1.2 mm long hairs, denser towards leaf margins and along veins; abaxial surface densely stellate-hairy, with whitish hairs of two lengths, 0.3–0.5 mm and 0.9–1.2 mm, longer hairs particularly evident along veins; primary and secondary veins impressed on adaxial surface, raised on abaxial surface. *Inflorescence* a few-flowered, leaf-opposed cyme of 1–3 flowers; peduncle 2–8 mm long; pedicels 2–6 mm long, densely stellate-hairy; bract singular, 0.5–1.0 mm from base of pedicel, linear, 3–10 mm long, persistent, stellate-hairy. *Calyx lobes* 5, 7–9 mm long, pink, abaxial surface densely stellate-hairy with translucent hairs, adaxial surface sparsely to moderately stellate-hairy with translucent hairs. *Petals* 5, free, pink, glabrous, unequally and broadly 3-lobed; 5–7 mm long, 4–5 mm wide at broadest point, linear towards the tips; petal bases broad, truncate and concave about the staminal tube, and then ligulate or tongue-shaped above. *Stamens* 5, almost sessile, opposite the petals: staminal tube white, c. 0.4 mm long; anthers yellow. *Staminodes* 5, white with pink tips, alternating with the stamens, glabrous, each staminode shallowly 3-lobed, the central lobe much wider and more conspicuous than the small, obscure lateral lobes. *Ovary* densely stellate-hairy; styles 5, pale yellowish-green, fused for their entire length; stigmas globular, yellowish-green. *Capsule* globose, lime-green turning pale brown with age, 10–16 mm diameter, densely covered in 2–4 mm long bristles, each bristle sparsely to moderately covered in 2–5 armed stellate hairs, with a 9–16 armed stellate hair apically. *Locules* 5, each with 4–6 ovules. *Seeds* ellipsoid, dark brown, glabrous, warty, 1.5–2.5 mm long; aril basally attached, a creamy-white to pale-brown segmented lobe, 1.0–1.25 mm long. (Fig. 1).

Selected specimens examined: New South Wales: Central Western Slopes: Pikes Gap, 4 km E of Sandy Hollow, 32°20'S, 150°36'E, 250 m alt., L.M. Copeland 1837, 21 Aug 1999 (NE, NSW); Giants Creek, 2.6 km NW of Sandy Hollow, 32°18'27"S, 150°32'13"E, 340 m alt., S.A.J. Bell s.n., 13 Nov 1996 (NSW); Peberdeys Road, 2.8 km SW of Sandy Hollow, 32°20'50"S, 150°32'32"E, 280 m alt., S.A.J. Bell s.n., 20 Feb 1997 (NSW).

Illustration: Bell (1997) *Vegetation survey and mapping of Crown land, south of Mauobalai Nature Reserve, upper Hunter Valley*, cover and Pl. 1 (as *Rulingia procumbens*).

Distribution: *Commersonia rosea* is currently known from four populations in the Sandy Hollow district of the upper Hunter Valley, New South Wales (Fig. 2). The four localities (Pikes Gap, Giants Creek, Peberdys Road and Boodles Creek) fall within an 8 km radius of Sandy Hollow, within the Central Western Slopes of New South Wales. Specimens from the Boodles Creek population have not been seen by the authors,



Fig. 1. *Commersonia rosea* **a**, flowering and fruiting branch; **b**, flower from above, showing calyx lobes and erect, 3-lobed petals; **c**, inflorescence showing flower buds and linear bracts; **d**, capsule with persistent calyx; **e**, capsule bristle with stellate hairs. Scale bar: a = 3 cm; b = 6 mm; c = 8 mm; d = 1 cm; e = 1 mm. (a from S.A.J. Bell s.n. 20 Feb. 1997; b, c, d, e from L.M. Copeland 2819 & W.E. Holzinger.)

however material has been determined as *Commersonia rosea* (R. Miller, *pers. comm.*). Vegetation surveys in the nearby Manobalai Nature Reserve, Goulburn River National Park, Myambat Logistics Company site, Wollemi National Park and other Crown lands have failed to locate further populations (Bell 1997; Fallding et al. 1997; Hill 1999; Bell 1998; S. Bell *pers. obs.* 2000).

Flowering: plants have been observed flowering in August, November, January and February.

Habitat: this species occurs on skeletal sandy soils of the Triassic Narrabeen series, in scrub or heath vegetation with occasional emergents of *Eucalyptus crebra*, *Callitris endlicheri* or *Eucalyptus caleyi* subsp. *caleyi*. Commonly associated understorey species include *Melaleuca uncinata*, *Acacia triptera*, *Allocasuarina verticillata*, *Eucalyptus dwoyeri*, *Acacia doratoxylon*, *Acacia crassa*, *Calytrix tetragona*, *Leptospermum parvifolium*, *Boronia anethifolia*, *Melichrus urceolatus*, *Solanum brownii*, *Gonocarpus elatus*, *Hibbertia acicularis*, *Dampiera purpurea*, *Cleistochloa rigida*, *Lomandra glauca*, *Stypandra glauca*, *Mirbelia pungens*, *Halgania brachyrynchia*, *Pomax umbellata*, *Cheilanthes sieberi* subsp. *sieberi* and *Oxylobium pultenaea*. At three of the four sites, fire had occurred within 6–12 months prior to survey (see additional notes below).

Comparison with similar species: *Commersonia rosea* is easily distinguished from other species of *Commersonia* in New South Wales by its prostrate habit, smaller leaves, pink flowers, and its few-flowered cymes. Both of the presently recognised New South Wales taxa (*C. fraseri* and *C. bartramia*) are small trees or erect shrubs, with ovate to broad-ovate, 5–17 cm long leaves, possess white flowers in many-flowered cymes, and occur in rainforest or moister eucalypt forest.

Specimens of an undescribed *Commersonia* sp. (*Zamia Range*, R.W. Johnson 1398: Henderson 2002) collected from the Springsure district in Queensland perhaps show the strongest morphological affinities to *C. rosea*. *Commersonia melanopetala* F. Muell. from Western Australia also appears to be similar, and both are compared with *C. rosea* in Table 1. A full revision of the genus is required to better understand relationships between all species.

Table 1. A comparison of the distinguishing features of *Commersonia rosea* with those of *C. sp.* (*Zamia Range*) and *C. melanopetala*.

Character	<i>C. rosea</i>	<i>C. sp.</i> (<i>Zamia Range</i>)	<i>C. melanopetala</i>
Leaf colour (upper surface)	dark green	pale tan	mid green
Leaf indumentum (upper surface)	sparsely stellate not velvety	densely stellate hairy, hairy, not velvety	sparsely stellate hairy, appearing velvety
Leaf width	8–17 mm	4–9 mm	10–25 mm
Capsule diameter	10–16 mm	8–13 mm	5–8 mm
Flower colour	deep pink	white to pale pink	pale pink

C. rosea also has larger flowers, fewer flowers per inflorescence and shorter capsule bristles than *C. melanopetala* (which do not differ from the *C. sp.* *Zamia Range* specimens).

Conservation status: a ROTAP code of 2E (following Briggs & Leigh 1996) is recommended. Two of the four populations are small in size (<15 plants), while a third

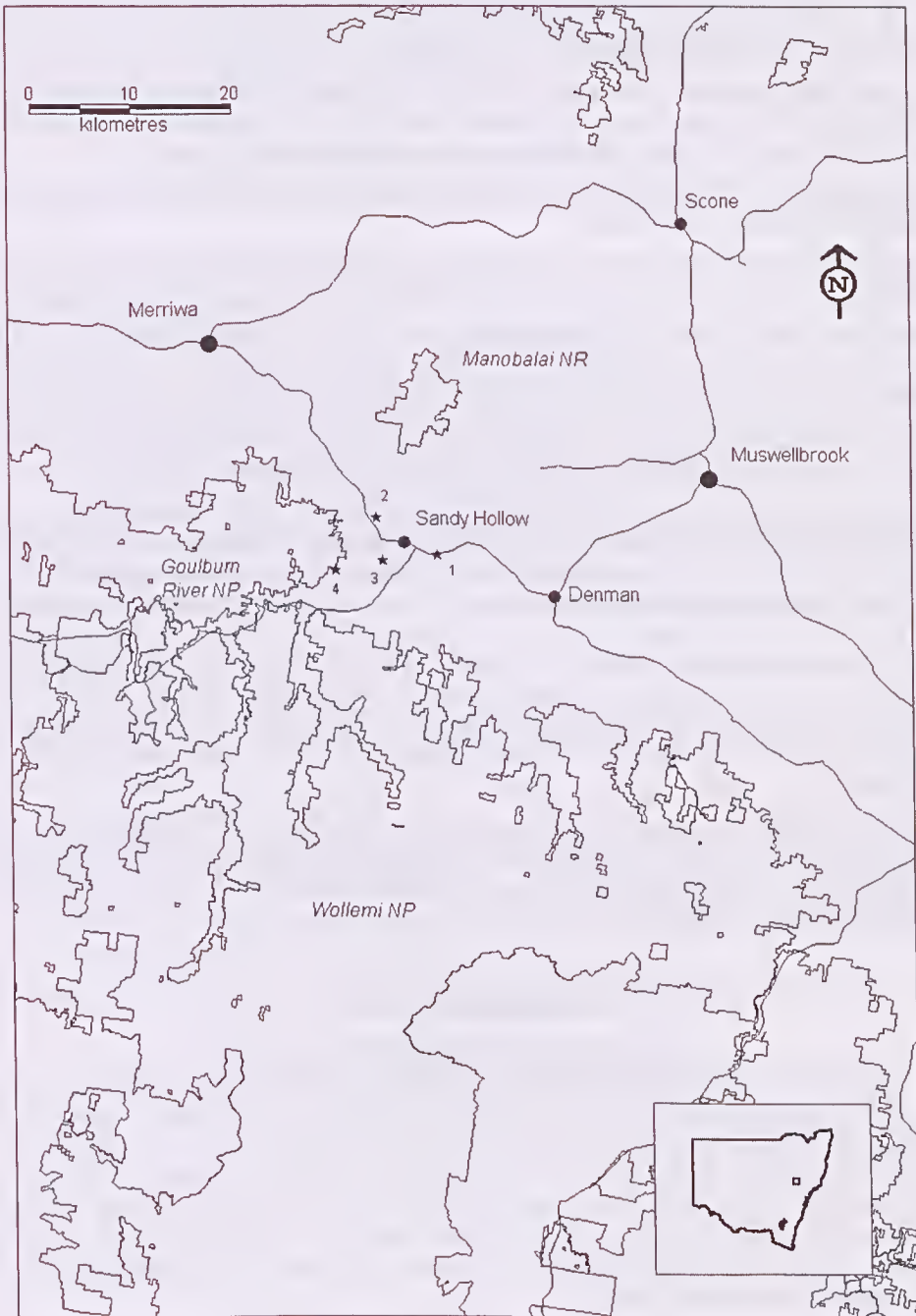


Fig. 2. Location of *Commersonia rosea* populations near Sandy Hollow in the upper Hunter Valley, showing existing conservation reserves. ★1 = Pikes Gap, ★2 = Giants Creek, ★3 = Peberdys Road, ★4 = Boodles Creek.

(Peberdys Road) was estimated to contain >100 plants in 1997 (Bell 2001). The species at Boodles Creek was reported to have been locally common over a small area in 1999 (R. Miller, *pers. comm.* 1999). All populations are unreserved and have relatively small occupancy areas. Based on current knowledge, a total population of less than 200 individuals is estimated. The Pikes Gap population occurs along a vehicular track and is particularly threatened by low numbers and physical disturbance through track maintenance. The other three populations occur in Crown land on low ridgetops, and may be threatened by future development should land tenure change.

Etymology: The specific epithet *rosea* is from the Latin, and refers to the spectacular deep pink flowers of this taxon.

Additional notes: vegetative cuttings taken from the type locality 'struck' particularly easily and have grown quickly. Seed collected from mature fruits have also germinated and produced flowering plants within 18 months under glasshouse conditions. Plants of *C. rosea* appear to be short-lived in cultivation, however, as most plants grown from cuttings flowered, fruited and then died within a 12 month period. Live plants grown from cuttings and/or seed have been donated to the Australian National Botanic Gardens in Canberra, the Hunter Regional Botanic Gardens at Raymond Terrace and Mt Annan Botanic Gardens in south-western Sydney.

All populations have been initially detected after some form of disturbance, either through fire (for Giants Creek, Peberdys Road & Boodles Creek) or roadworks (Pikes Gap). Consequently, *C. rosea* appears to be a fire-ephemeral, flowering and fruiting only after disturbance. A visit to the Peberdys Road site approximately 12 months after the initial observation failed to re-locate the species. In addition, no trace of the species could be found at this location in September 2002, five years after the first discovery. Only two old individuals of the species could be found at the Pikes Gap location in September 2002, these being in poor condition with few leaves and little active growth, possibly as a result of the dry conditions experienced in the upper Hunter Valley at this time.

Bell (2001) briefly discussed three populations of this species (as *Rulingia procumbens*), including reference to the Boodles Creek population. His suggested amendment to the ROTAP conservation code for *R. procumbens* should be disregarded in the light of the recognition here of *C. rosea*.

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